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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/320,077 05/26/99 NOTTE

P SOLU113

EXAMINER

IM62/0505

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HOUSTON TX 77057-2198

VANDY, T

ART UNIT

PAPER NUMBER

1754

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DATE MAILED:

05/05/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09-320,077

Applicant(s)

OPPENHEIM et al.

Examiner

VANDY

Group Art Unit

1754

- ☐ Responsive to communication(s) filed on _____.
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire THREE month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-30 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-30 is/are rejected.
- ☒ Claim(s) 1-3, 18, 26 AND 27 is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☒ The specification is objected to by the Examiner.
- ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- *Certified copies not received: _____.
- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Oath/Declaration

See The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because non-initialed and/or non-dated alterations have been made to the inventor's typed name "Greg Croce". See 37 CFR 1.52(c).

Specification

a) The specification is objected to because it does not include a brief description of each of the figures under the header "Brief Description of the Drawings": please see 37 C.F.R. 1.74 and MPEP section 608.01(f).

b) The abstract is objected to because it does not provide any examples of the "reducing agent": please see MPEP section 608.01(b) under the "Content" header.

c) The abstract is objected to because it does not inform the reader if oxygen is the impurity to be removed from the nitrous oxide gas.

d) The abstract is objected to because it does not provide any examples of the "catalyst": please see MPEP section 608.01(b) under the "Content" header.

Claim Objections

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- OL*a) In claims 2 and 3, the phrases "a hydrogen containing gas" is objected to in as much as it is the hydrogen (rather than the gas) that is the reducing agent. The phrases "a carbon monoxide containing gas" and "an ammonia containing gas" are also objected to for the same reason. It would suffice to simply recite that the reducing agent is hydrogen, carbon monoxide and ammonia.
- OL*b) Claim 2 is objected to because Markush language is not used to describe the members of the group of reducing agents.
- c) In claims ^{*OL*}18 and ^{*OL*}26, the phrase "prior to and subsequent to" is objected to for being redundant.
- OL*d) In claim 27 line 2, --is-- should be substituted in lieu of "comprises".
- OL*e) Claim 1 is objected to for being incomplete. If the NO_x, nitrogen, carbon monoxide, carbon dioxide or organic compounds set forth in claim 6 are the impurities in the nitrous oxide gas of claim 1, then the process of claim 1 does not purify the gas of the contaminants in as much as there is nothing in either of claims 1 or 6 that sets forth that the oxygen of claim 1 is a contaminant.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

na) Claim 1 does not particularly point out and distinctly set forth what the gas is being purified from.

nb) In claims 2, 4, 6, 12, 13, 20, 22, 23 and 29, the phrase style "comprises X, Y or Z" as used in these claims renders the claims vague and indefinite in as much as it is not known (for example, in referring to species recited in claim 6) if the nitrous oxide gas can contain only one of the species mentioned, or if the nitrous oxide gas must contain the NO_x, nitrogen, carbon monoxide and one of carbon dioxide or organic compounds.

In the case where only one of the species are required, then it is suggested to use standard Markush language to define the group of species.

nc) The language of claim 1 suggests that the gas being treated contains 99 vol. % oxygen with the remainder of the gas being nitrous oxide (and possibly other contaminants). In as much as this would not appear to be the case, it is suggested to recite that up to 99 percent of the O₂ present in the nitrous oxide is removed. Note that "O₂" has been used in lieu of "oxygen" to distinguish from the atomic oxygen present in nitrous oxide, carbon monoxide, etc. . .

Claim Rejections - 35 USC § 102

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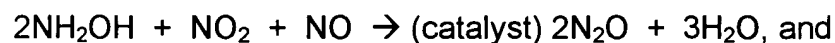
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-7, 12 and 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by German (Deutsche Demokratische Republik) Patent Document 83,974 (hence "German-974").

The English abstract of German-974 discloses a process for the purification of nitrous oxide gas contaminated with higher nitrogen oxides (evidently, nitrogen monoxide and nitrogen dioxide) and oxygen (please see the paragraph under the "Use/Advantage" header), by (evidently) reacting the nitrogen oxides and oxygen within the nitrous oxide gas with what may be ammonium hydroxide (the English abstract reports "NH₂OH") according to the reactions:



The catalyst is reported to be a platinum group metal (please see the paragraph under the "New" and "Examples" header).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

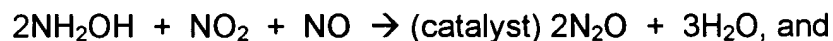
The person having "ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent Document No. 83,974 (hence "German-974") in view of U. S. Pat. No. 4,351,811 to Matsuda et al.

The English abstract of German-974 discloses a process for the purification of nitrous oxide gas contaminated with higher nitrogen oxides (evidently, nitrogen monoxide and nitrogen dioxide) and oxygen (please see the paragraph under the "Use/Advantage" header), by (evidently) reacting the nitrogen oxides and oxygen within the nitrous oxide gas with what may be ammonium hydroxide (the English abstract reports "NH₂OH") according to the reactions:



The catalyst is reported to be a platinum group metal (please see the paragraph under the "New" and "Examples" header).

The difference between the Applicants' claims and German-974 is that the Applicants' claims call for passing the nitrous oxide gas through a (different) selective reduction catalyst (oxides of vanadium and/or titanium) so that the catalyst promotes the reaction between ammonia or ammonia precursors and nitrogen oxides in the nitrous oxide gas.

The Matsuda et al. patent describes a process for removing nitrogen monoxide and ammonia out of gases emitted from a variety of industrial plants and processes (please see col. 1 lns. 6-12) by contacting the gas with a catalyst titanium oxide and

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another oxide which may be vanadium oxide so that the nitrogen oxides and ammonia react together to form nitrogen and water (please see col. 1 ln. 67 to col. 2 ln. 5 as well as col. 2 ln. 45 to col. 3 ln. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process described in the English abstract of German-974 by including the titanium oxide catalyst described in col. 1 ln. 67 to col. 2 ln. 5 and col. 2 ln. 45 to col. 3 ln. 2 in the Matsuda et al. patent, as required in the Applicants' claims, because of the expected advantage of removing any nitrogen oxides (and any ammonia) remaining in the nitrous oxide gas of German-974 with a catalyst which has an activity for the reaction between NO and NH₃ that is very excellent (please see col. 2 lns. 4-5 in the Matsuda et al. patent).

The limitations set forth in the other claims (describing the source of the gas to be treated; the content of the contaminants in the gas before and after treatment; the number of reactors used, etc. . .) are noted, but are submitted to have been obvious to one of ordinary skill in the art at the time the invention was made in as much as it is expected to be well within the skill level of the person having ordinary skill in the art to readily determine the source of the gas to be treated; the content of the contaminants in the gas before and after treatment; the number of reactors used, etc. .

The following references are made of record:

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European Pat. App'n. 0 636 576 A1 disclosing ultra-high purity nitrous oxide producing method and unit;

European Pat. App'n. 0 004 080 A2 disclosing a method for producing nitrous oxide;

Japan Pat. Doc. 6-122,506 A disclosing a process for the preparation of nitrous oxide, and

Japan Pat. Doc. 45-13,446 disclosing a process for the purification of nitrous oxide.

Any inquiry concerning this communication should be directed to Timothy C. Vanoy at telephone number 703-308-2540.

Timothy Vanoy/tv


Timothy Vanoy

03 May 2000

Patent Examiner

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